

A REVISION OF THE GENERA OF POEMENIINI AND XORIDINI
(HYMENOPTERA, ICHNEUMONIDAE)

HENRY TOWNES, *Museum of Zoology, University of Michigan, Ann Arbor.*

The ichneumonid tribes Poemeniini and Xoridini belong in the subfamily Pimplinae, which subfamily includes species with usually a rather cylindrical body shape, areolet triangular or absent, tarsal claws not visibly pectinate but often lobed or cleft, spiracle of first abdominal tergite at or in front of the middle, and ovipositor long and without a subapical dorsal notch. These characters are rather general in statement and subject to exceptions, but are enough for a correct subfamily placement of the majority of the Pimplinae, including members of the present two tribes. Perhaps the greatest difficulty for the tribes under consideration is to distinguish them from members of the Gelinae belonging to the subtribe Echthrina (tribe Mesostenini). The Echthrina differ from the Poemeniini and Xoridini in having the areolet, when present, rectangular or quadrangular (except in the Ethiopian genus *Gabunia*), and the dorsal valve of the ovipositor somewhat enclosed apically by a dorsal flange of the ventral valves. It is a common mistake of older authors to put some of these echthrine genera in the Xoridini because of a superficial resemblance, but both larval and adult characters show them to be true members of the Gelinae.

The Poemeniini and Xoridini have commonly been included in the single tribe Xoridini (Ashmead, 1900, Proc. U. S. Natl. Mus. 23: 60-62; and Schmeideknecht, 1907, Opuscula Ichneumonologica, p. 1336) or in the tribes Xoridini and Odontomerini (Cushman and Rohwer, 1920, Proc. U. S. Natl. Mus. 57: 395-396). More recently a division into two tribes approximately as used here has been effected, but heretofore without a statement of the characters on which the division was based (Townes, 1944, Mem. Amer. Ent. Soc. 11: 80-85; 102-115, and Townes and Townes, 1951, U. S. Dept. Agr., Agr. Monog. 2: 198-199; 204-207). In spite of the fact that members of the two tribes have been commonly classified together, they are not closely related. Larval and adult characters seem to ally the Poemeniini with the Rhysini and seem to relate the Xoridini with the Labenini and Acaenitini. At any rate, they are certainly distinct tribes.

KEY DISTINGUISHING THE POEMENIINI FROM THE XORIDINI

1. Propodeum not areolated, prepectal carina absent; epipleurum of second abdominal tergite very narrow, almost absent; middle tibia of female without oblique grooves..... Poemeniini
- Propodeum completely or almost completely areolated; prepectal carina present; epipleurum of second abdominal tergite moderately wide, usually about 0.25 times as wide as long; middle tibia of female usually with one or two oblique grooves that give it a twisted appearance. Xoridini

Tribe **Poemeniini**

As defined in the key, this tribe includes *Poemenia*, *Deuteroxorides*, *Neoxorides*, *Eugalta*, and the new genera *Podoschistus*, *Cnastis*, and *Ganodes*. In 1944 I included also the genera *Clistopyga* and *Diacritus* (Mem. Amer. Ent. Soc. 11: 80-85). *Clistopyga* was removed to the Polysphinctini in 1951 (Townes and Townes, U. S. Dept. Agr., Agr. Monogr. 2: 192). *Diacritus* has a prepectal carina, and in some other, less definite, characters is a misfit in the Poemeniini. It is hereby removed from the Poemeniini and referred provisionally to the Plectiscinae. The genera which I believe are properly referred to the Poemeniini are discussed below.

KEY TO THE GENERA OF POEMENINI

1. Mandible with two apical teeth, the upper tooth smaller; clypeus evenly convex, about 2.0 times as wide as long; tarsal claws simple. Holarctic. *Poemenia*
Mandible without two teeth, its apex truncate and chisel-shaped; clypeus basally convex and apically impressed, 1.3 to 1.8 times as wide as long; tarsal claws of middle legs with a subapical tooth except in *Neoxorides*. ... 2
2. Dorsal half of temple finely and weakly scabrous; clypeus about 1.8 times as wide as long. Palaearctic. *Deuteroxorides*
Dorsal half of temple coarsely and strongly scabrous; clypeus about 1.5 times as wide as long. 3
3. Outer claw of hind tarsus bent at a sharp angle, the inner claw more weakly curved; apical unguinal bristle on outer claw of hind tarsus enlarged and spatulate. Oriental and Japanese. *Eugalta*
Outer claw of hind tarsus not bent at a sharp angle and not more sharply curved than inner claw; apical unguinal bristle on outer claw of hind tarsus not enlarged. 4
4. Tarsal claws simple; second and third tergites impunctate or with a few weak punctures. Holarctic. *Neoxorides*
Tarsal claws with a subapical tooth, or the hind claws sometimes simple; second and third tergites definitely punctate. 5
5. Hind tarsal claws with a subapical appressed tooth; nervulus opposite the basal vein. Holarctic. *Podoschistus*
Hind tarsal claws simple; nervulus before the basal vein by about 0.25 to 0.45 times its length. 6
6. Areolet present; first tergite of female about 2.4 times as long as wide. Neotropical. *Ganodes*
Arolet absent; first tergite of female about 1.5 to 2.0 times as long as wide. Japan, Philippines, Java, and Siam. *Cnastis*

Genus **Poemenia**

Poemenia Holmgren, 1859. Ofvers. Svenska Vetensk. Akad. Forh. 16: 130.

Type: *Poemenia notata* Holmgren. Monobasie.

Callielisis Foerster, 1868. Verh. Naturh. Ver. Rheinlande 25: 169.

Type: *Ephialtes hecticus* Gravenhorst. Designated by Viereck, 1914.

Phthinodes Tschek, 1868. Verh. Zool.-Bot. Gesell. Wien 18: 272.

Type: *Ephialtes hecticus* Gravenhorst. Monobasic.

Euxorides Cresson, 1870. Trans. Amer. Ent. Soc. 3: 167.

Type: *Euxorides americanus* Cresson. Monobasic.

Lissonotopsis Habermehl, 1917. Ztschr. Wiss. Ins.-Biol. 13: 234, 306.

Type: (*Lissonotopsis rufa* Habermehl) = *hectica* Gravenhorst. Monobasic.

Clypeus moderately large, about 2.0 times as wide as long, evenly convex, covered with rather long hairs, its apical margin concave; mandible moderately long, with two apical teeth, the upper tooth shorter; temple in profile about 0.53 times as long as eye, its dorsal half sometimes with a weakly scabrous area; mesoscutum moderately trilobed; notauli strong anteriorly, fading out on disc of mesoscutum; areolet present or absent, when absent the intercubitus about 0.8 times as long as second abscissa of cubitus; nervulus usually opposite basal vein, but sometimes before or a little beyond; tarsal claws simple, those of the hind legs sharply curved in a right angle turn; first tergite about 2.0 to 3.5 times as long as wide; second and third tergites with fine dense punctures.

This is a rather small, Holarctic genus. In North America there are four species.

Genus **Deuteroxorides**

Deuteroxorides Viereck, 1914. Bul. U. S. Natl. Mus. 83: 43.

Type: *Xorides albitarsus* Gravenhorst.

Clypeus rather small, about 1.8 times as wide as long, convex basally, the rest impressed and the apical margin concave; mandible of moderate length, its apex chisel-shaped, without teeth; temple in profile about 0.5 times as long as eye, its dorsal half finely and half weakly scabrous; mesoscutum strongly trilobed; notauli strong, almost meeting on disc of mesoscutum; areolet absent; intereubitus about 0.5 to 1.0 times as long as second abscissa of cubitus; nervulus opposite or a little before basal vein; tarsal claws of male simple, the outer claw of hind tarsus more sharply curved than inner claw; female tarsal claws with an internal truncate tooth on front and middle legs, simple on hind leg or with an inner tooth on inner claw, the outer claw more sharply curved than inner claw; first tergite about 2.0 to 4.0 times as long as wide; second and third tergites with rather close, moderate sized punctures.

There are two species: the European *Xorides albitarsus* Gravenhorst, 1829, and the Japanese *Xorides orientalis* Uchida, 1928.

Genus **Eugalta**

Eugalta Cameron, 1899. Mem. & Proc. Manchester Lit. Phil. Soc. 43: 135.

Type: *Eugalta strigosa* Cameron. Designated by Ashmead, 1900.

Pseudeugalta Ashmead, 1900. Proc. U. S. Natl. Mus. 23: 55.

Type: *Eugalta spinosa* Cameron. Monobasic.

Baliëna Cameron, 1900. Mem. & Proc. Manchester Lit. Phil. Soc. 44: 101.

Type: *Baliëna leptopus* Cameron. Monobasic.

Tilgida Cameron, 1900. Mem. & Proc. Manchester Lit. Phil. Soc. 44: 108.

Type: *Tilgida albitarsis* Cameron. Monobasic.

Aethria Tosquinet, 1903. Mém. Soc. Ent. Belgique 10: 114. New synonymy.

Type: *Aethria conspicua* Tosquinet. Monobasie.

Bathymyris Cameron, 1906. Entomologist 39: 251.

Type: *Bathymyris longipes* Cameron. Monobasie.

Formoxorides Uchida, 1928. Jour. Fac. Agr. Hokkaido Univ. 25: 14.

Type: *Achorocephalus pilosus* Szépligeti. Original designation.

Clypeus small, quadrate, about 1.5 times as wide as long, convex basally, apically impressed, the apical margin subtruncate; mandible short, its apex chisel-shaped, without teeth; temple in profile about 0.3 times as long as eye, its upper half coarsely scabrous; mesoscutum strongly trilobed; notauli strong, strongly convergent, and almost meeting on disc of mesoscutum; areolet present or absent, when absent the intercubitus about as long as second abscissa of cubitus; nervulus opposite basal vein; tarsal claws each with a large truncate median tooth; outer claw of hind tarsus bent a little sharper than a right angle, its median tooth obscured within the bend and its apical unguis enlarged and spatulate; first tergite about 2.0 to 4.0 times as long as wide; second and third tergites polished, impunctate or variously punctate.

This is an Oriental genus, with many species. One species, (*Xorides*) *Engalta albomarginalis* Uchida, 1928 (new combination), occurs in Japan.

Genus *Podoschistus*, new genus

Clypeus small, quadrate, about 1.2 times as wide as long, basally convex, the rest impressed, its apex truncate or concave; mandible short, its apex chisel-shaped, without teeth; temple in profile about 0.55 times as long as eye, its upper half coarsely scabrous; mesoscutum rather strongly trilobed; notauli strong, convergent and almost meeting on disc of mesoscutum; areolet absent, the intercubitus about 0.5 times as long as second abscissa of cubitus; nervulus opposite basal vein; tarsal claws with a median, appressed, pointed tooth; first tergite about 2.3 to 3.0 times as long as wide; second and third tergites mat, with moderate punctures.

Genotype—*Xorides vittifrons* Cresson, 1868.

This is a Holarctic genus, including *Xorides vittifrons* Cresson, 1868, from eastern North America; *Xorides scutellaris* Desvignes, 1856, from Europe; and *Xorides alpenis* Uchida, 1928, from Japan.

Genus *Ganodes*, new genus

Clypeus small, quadrate, about 1.5 times as wide as long, convex basally, the rest impressed, its apical margin subtruncate; mandible short, its apex chisel-shaped, without teeth; temple in profile about 0.4 times as long as eye, its upper half coarsely scabrous; mesoscutum strongly trilobed; notauli strong, convergent, meeting on disc of mesoscutum; areolet present; nervulus before basal vein by about 0.3 times its length; claws on front and middle legs of female (the male unknown) with a small median acute tooth; claws on hind tarsus simple, rather strongly curved; first tergite of female about 2.3 times as long as wide; second and third tergites polished, with moderate sized punctures.

Genotype—*Ganodes balteatus*, new species.

Ganodes balteatus, new species

Female.—Fore wing 10 to 15 mm. long. Frons impunctate but with a few setae; scrobe of pronotum impunctate; mesoscutum smooth, with scattered small, indistinct punctures, centrally with some sharp wrinkles; mesopleurum polished, most of it with shallow, moderate-sized, rather close punctures; propodeum transversely wrinkled on its median third, wrinkled on its lower margin, the rest with rather sparse weak punctures; first tergite polished, with a few weak punctures and faint, fine transverse wrinkling; second and third tergites with moderate sized, rather close punctures interrupted by a median impunctate stripe, the stripe a little wider and the punctures a little sparser on the second tergite.

Head white, the mandible, scabrous area on temple, frons medially and connected with upper half of occiput, and antenna except for flagellar segments 8 to 19 black; propleurum brown, whitish near fore coxa; pronotum black, broadly white below and above; mesoscutum black, a lateral spot on front part of median lobe and a pair of discal streaks whitish; scutella white surrounded by black; propodeum whitish, its median third black and with a dark brown pleural stripe extending from spiracle posteriorly; a triangle under hind wing brownish; pleura and sterna rufus, the mesopleurum sometimes mottled with whitish and with black below the subalar tubercle; subalar tubercle of mesopleurum and mesepimeron whitish; tegula white; wings hyaline, their veins dark brown but the costa basally whitish. Legs fulvous, the fore coxa anteriorly, the middle and hind coxae posteriorly, and tinges on front and middle femora and middle trochanters brownish; front and middle tarsi blackish apically; hind femur blackish; hind tibia and tarsus yellow.

Type.—♀, Nova Teutonia, Brazil, IX-27-40, Fritz Plaumann (Townes).

Paratypes.—3 ♀♀, same data as the type but with the dates III-24-27, IX-13-40, and X-19-40 (Townes).

Genus **Cnastis**, new genus

Clypeus small, quadrate, about 1.5 times as wide as long, convex basally, apically impressed, the apical margin subtruncate; mandible very short, its apex chisel-shaped, without teeth; temple in profile about 0.67 times as long as eye, its upper 0.6 coarsely scabrous; top of head somewhat flattened; mesoscutum weakly trilobed; notauli sharp but not strongly impressed, almost meeting on disc of mesoscutum; areolet absent, the intercubitus about 1.1 to 1.35 times as long as second abscissa of cubitus; nervulus before basal vein by about 0.3 to 0.4 times its length; tarsal claws of fore and middle legs of female with an acute submedian tooth; tarsal claws of hind leg simple, strongly curved; first tergite of female about 1.5 to 2.0 times as long as wide; second and third tergite polished, with rather coarse, moderately dense punctures. The last tergite of the female is unusual in extending beyond the cerci as a flattened lobe that is longer than wide. In related genera the apex of the female last tergite is shorter and scoop-shaped.

Genotype.—*Nxororides longicaudis longicaudis* Baltazar, 1955.

The genotype is from Luzon in the Philippines. There is a subspecies of the genotype (*N. longicaudis mindanensis* Baltazar, 1955) in Mindanao, Philippines, an undescribed subspecies of *N. longicaudis*

in Siam, and a specimen of the species is known from Java. *Xorides vulgaris* Uchida, 1928, is a second species of the genus, occurring in Japan.

Genus *Neoxorides*

Neoxorides Clément, 1938. Festschr. Embrick Strand, v. 4, p. 517.

Type: *Xorides nitens* Gravenhorst. Original designation.

Clypeus small, quadrate, about 1.5 times as wide as long, convex basally, the rest impressed, its apical margin subtruncate; mandible short, its apex chisel-shaped, without teeth; temple in profile about 0.6 times as long as eye, its upper half coarsely scabrous; mesoscutum strongly trilobed; notauli strong, approximate on disc of mesoscutum; areolet absent, the intercubitus about 0.4 times as long as second abscissa of cubitus; nervulus interstitial; claws simple, moderately curved; first tergite about 2.0 to 3.0 times as long as wide; second and third tergites microscopically transversely aciculate, impunctate or with a few weak, inconspicuous punctures.

This is a Holarctic genus, including the European *Xorides nitens* Gravenhorst, 1829, the European *Xorides collaris* Gravenhorst, 1829, and the American *Xorides caryae* Harrington, 1891, and *Xorides borealis* Cresson, 1870.

Tribe *Xoridini*

This tribe includes *Xorides* (= *Xylonomus*), *Ischnoceros*, *Odontocolon*, and *Aplomerus*. *Xorides* is an isolated genus. The other three form a compact group, differing from *Xorides* as indicated in the key to genera and in the ovipositor as described under the genera.

KEY TO THE GENERA OF XORIDINI

1. Mandible without two teeth, its apex chisel-shaped; epomia long and strong, usually projecting dorsally as a tooth; female antenna curved or elbowed subapically, at the curve or elbow with one, two or a series of peg-like setae. Worldwide. *Xorides*
- Mandible with two subequal teeth (as normal); epomia absent or short and weak, not projecting dorsally; female antenna not specialized subapically (as described above). 2
2. Hind femur with a strong median ventral tooth. Holarctic. *Odontocolon*
Hind femur without a median ventral tooth. 3
3. Frons with a strong median horn or tubercle; body subcylindric.
Holarctic. *Ischnoceros*
Frons without a median horn or tubercle; body flattened. Nearctic. *Aplomerus*

Genus *Ischnoceros*

Ischnoceros Gravenhorst, 1829. Ichneumonologia Europaea 2: 949.

Type: *Ichneumon rusticus* Foureroy. Designated by Viereck, 1914.

Head and body not depressed; apex of mandible with two subequal teeth; frons with a strong median horn or tubercle; female flagellum not specialized as in *Xorides*; epomia absent; hind femur not thickened, without a tooth beneath; first abdominal segment short, stout, rather strongly bent at the middle; second tergite with weak oblique basal grooves; second and third tergites punctate or

transversely aciculate; apical part of ovipositor weakly compressed, the ventral valve with about five ridges, basad of which there is no roughened area.

There are several Palaearctic species, and one in the United States. The United States species is described below.

Ischnoceros clivulus, new species

Female—Forewing 7 to 8 mm. long. Frons with rather fine punctures, and with a large, median, mound-like, weakly compressed tubercle whose apex is weakly grooved vertically; mesoscutum polished, with small punctures whose interspaces are about 1.5 times their diameter; mesopleurum polished, with moderately large weak punctures whose interspaces are about equal to their diameter; area dentipara with a weak transverse apical tooth; first tergite without a dorso-lateral carina beyond the spiracle; second tergite polished, except near the apical margin covered with microscopic transverse aciculation; ovipositor sheath about 0.67 times as long as fore wing.

Black. Tegula, base of fore wing, and base of hind tibia externally, whitish; wings faintly tinged with brown, the veins dark brown; legs ferruginous, the hind tibia with a weak apical infuscation; abdomen brownish ferruginous basally, darkening to brown apically; ovipositor sheath blackish, ferruginous at the apex.

This is the only species of *Ischnoceros* with the abdomen partly ferruginous. Its frontal horn is unexcavated, as in *Ischnoceros sapporensis*, but the abdominal sculpture is aciculate as in *I. rusticus* rather than punctate as in *I. sapporensis*.

Type—♀, Cinder Cone, Lassen National Park, Calif., VI-19-41, P. D. Hurd (Berkeley).

Paratypes—2 ♀♀, same data as type (Berkeley and Townes). ♀, Wright's Lake, Eldorado Co., Calif., VII-2-48, P. D. Hurd (Berkeley).

Genus *Odontocolon*

Odontomerus Gravenhorst, 1829. Ichneumonologica Europaea 3:851.

Name preoccupied by Leach, 1819.

Type: *Ichneumon dentipes* Gmelin. Designated by Westwood, 1839.

Odontocolon Cushman, 1942. Proc. Ent. Soc. Wash. 44: 179. New name.

Head and body not, or weakly flattened; apex of mandible with two subequal teeth; frons without a median tubercle or horn; female flagellum not specialized as in *Xorides*; epomia absent or rudimentary; hind femur thickened, beneath with a strong median tooth; first abdominal segment rather slender basally and enlarged apically, a little bent near the middle; second tergite without oblique basal grooves; first and second tergites polished, smooth or more or less aciculate or punctate; apical part of ovipositor weakly compressed, the ventral valve with about five ridges, basad of which there is no roughened area.

This is a Holarctic genus with numerous species.

Genus **Aplomerus**

Platysoma Provancher, 1885. Canad. Ent. 17: 115. Name preoccupied by Leach, 1817, by Lienard, 1832, and by Brandt, 1835.

Type: *Platysoma tibialis* Provancher. Monobasic.

Aplomerus Provancher, 1886. Addit. Corr. Faune Ent. Canada p. 117.

New name for *Platysoma*.

Anodontomercus Ashmead, 1900. Proc. U. S. Natl. Mus. 23: 61.

Type: *Aplomerus tibialis* Provancher. Original designation.

Haplomerus Dalla Torre, 1901. Catalogus Hymenopterorum. 3: 392.

Emendation.

Head and body distinctly flattened; apex of mandible with two subequal teeth; frons without a median horn or tubercle; female flagellum not apically specialized as in *Xorides*; epomia absent; hind femur not thickened, without a tooth beneath; first abdominal segment depressed, its spiracle near its basal 0.3; second tergite without oblique basal grooves; first and second tergites polished or with various aciculation or fine wrinkling; apical part of ovipositor weakly compressed, the ventral valve with about five ridges, basad of which there is no roughened area.

This is a Neartic genus, with five species.

Genus **Xorides**

Xorides Latreille, 1809. Hist. Nat. Crust. Ins. 4: 4.

Type: *Ichnonon indicatorius* Latreille. Monobasic.

Epixorides Smith, 1862. Jour. Proc. Linnæan Soc. London (Zool.) 6: 64.

New synonymy.

Type: *Epixorides chalybeator* Smith. Monobasic.

Moansa Tosquinet, 1896. Mem. Soc. Ent. Belgique 5: 345. New synonymy.

Type: *Moansa praestans* Tosquinet. Monobasic.

Neoxyloonomus Szépligeti, 1914. Ann. Mus. Natl. Hungarici 12: 421.

New synonymy.

Type: *Neoxyloonomus australis* Szépligeti. Monobasic.

Other synonyms: *Xylonomus*, *Sterotrichus*, *Gonophonus*, *Mocrophora*, *Sichelia*, *Rhadina*, *Perissocerus*, *Cyanoxorides*, *Spiloxorides*, *Macrosterotrichus*, *Caenostoma*, *Periceros*, *Rhadinopimpla*, *Ahyborhyssa*, *Laraudenia*, *Xylonominus*, and *Neoxyloonomus* Clément, not Szépligeti.

Head and body not, or weakly flattened; apex of mandible chisel-shaped, with out teeth; frons without a median tubercle or horn, or sometimes with a horn or lamella between the antennal bases; female flagellum subapically elbowed or curved, on the outer side of the elbow or curve with one to several peg-like bristles; epomia strong, long, dorsally turning forward and usually forming a projecting tooth at the turn; hind femur not thickened, without a tooth beneath; first abdominal segment subcylindric or prismatic basally, expanded apically, stout and rather short to elongate and slender; second tergite nearly always with an oblique basal groove on each side cutting off baso-lateral corners, and often with other grooves or impressions; second and third tergites variously sculptured; apical part of ovipositor cylindric or slightly depressed, the lower valve with about eight ridges, basad of which there is a roughened area.

This is a large genus of worldwide distribution and much structural diversity among its species. The specific diversity has led to the creation of separate genera for reception of some of the structural types. I list these generic names above as simple synonyms, though it is probable that after the specific relations are better understood it will be advisable to use some of the proposed names for subgenera.

BOOK REVIEW

A CLASSIFICATION OF THE FIRST INSTAR LARVAE OF THE MELOIDAE (COLEOPTERA), by J. W. MacSwain. University of California Publications in Entomology, University of California Press, vol. 12, iv plus 181 pp., 29 pls. 1956. \$3.00.

The title is perhaps an understatement of the scope of the paper, for in actuality this work represents a carefully analyzed account of both the phylogeny and the classification of the Meloidae of the world. Furthermore, while the author's primary source of data was a comparative study of the morphology of the first stage larvae, information pertaining to the morphology of the adults and especially biology was integrated and temperately synthesized wherever possible. Since the author's ideas concerning the systematics of the family were based on all these lines of evidence, there is little doubt but that this definitive paper will represent the basic framework of the classification of the Meloidae for years to come, in spite of the fact that small changes will become advisable when more biological data are uncovered, when larvae of other species are collected, and when the adults are more completely studied.

The general outline of the paper is as follows: After the introduction, and acknowledgements, the author briefly but concisely presents the history of the biological and systematic work pertaining to the larvae. He next treats the known biology of the members of the family, summarizing the data at the end in the form of comparative biological diagnoses of three of the five subfamilies. Little is known of the other two subfamilies, which, however, are small. This is followed by a discussion of the morphology of the first instars, with particular reference to an evaluation of the characters of systematic use. The last part of the paper, dealing with systematics of the family, is by far the largest, occupying 127 pages. It is introduced by a treatment of the phylogeny, in which the author's reasons, both biological and morphological, for dividing the family into five subfamilies are presented and discussed. The paper then provides, in a strictly taxonomic arrangement, an account of the subfamilies, tribes, genera, and species based upon the known first-stage larvae. This section includes both keys and comparative descriptions, and lists as well the geographic range of the taxon, the larval food, and the data of the material examined. In addition, the descriptions are often accompanied by some general explanatory remarks pertaining to relationship, nomenclature, and other pertinent information. Also included in the paper is a very extensive selected bibliography covering eight and one-half pages. The study terminates with twenty-nine plates of precisely delineated comparative illustrations of the larvae, drawn mostly by the author.—JEROME G. ROZEN, JR., *Entomology Research Branch, U. S. Department of Agriculture, Washington, D. C.*